A SYSTEM OPERABLE TO IDENTIFY AND ACCESS INFORMATION ABOUT A USER

Technical field of the invention

The present invention relates in a first aspect to a system operable to identify and access information about a user of a distributed communication system.

In a second aspect the present invention relates to a method for identifying and accessing information about a user of a distributed communication system.

In a third aspect the present invention relates to at least one computer program product for identifying and accessing information about a user of a distributed communication system.

Description of related art

During the last years Internet has been the fastest growing media for communication and this expansion is expected to continue. One of the most common means to finance content and services in the Internet is by selling advertising space. In traditional media, advertising has been one of the primary sources of revenues and effort has always been focused on maximising the results from advertising.

Internet is not different when it comes to optimising advertising campaigns The goal for any party serving advertisement on the Internet is to be able to expose the correct advertisement to the Internet user in question. The problem with this is that it is relatively simple to be anonymous on the Internet and therefore it is normally only possible to prepare targeting of advertisement based on estimates given an Internet users previous visits on web-sites controlled by the advertisement serving party.

The technology to identity Internet users available today is based on the use of "cookies". A cookie is a data file stored at web- browser level. This technology has some serious disadvantages. First it is very easy for the Internet user to turn off the function to receive cookies. Second, it is the web-browser being identified, not the Internet user using the web-browser.

Today there is mainly one solution to the problem of identifying an Internet user. This solution is used today but has limitations. This solution is based on a

process of log-in where the Internet user is identified by a user name and authenticated by a password. By using a log-in process it is possible to determine which individual is using the web-browser at a given point in time on the specific web-site on which the user has logged in.

If it was possible to easily and safely identify an Internet user without the need for cookies or log-in procedures, a whole range of new possibilities should appear, such as the possibility to subsidise and/or charge activities or time spent on a specific web-site, the possibility to charge micro-amounts, or handling log-in without the Internet user being involved etc.

Summary

It is an object of the present invention to solve the above mentioned problems. The purpose of the invention is to be able to identify and access information about a user of a distributed communication system in real time without the users intervention whenever the user implicitly or explicitly requests a service from a service provider on e.g. the Internet.

According to the present invention there is provided in a first aspect a system operable to identify and access information about a user of a distributed communication system in real time without the users intervention. The system comprises at least one service device (108) operable to provide services to said user, and at least one access device operable to provide access to said distributed communication system. The system also comprises at least one control means connected to said at least one access device and to said at least one service device. The system also comprises a to said at least one access device connected identification device operable to identify an address of a specific user, and at least one storage device connected to said at least one control means. The system also comprises a to said at least one control means connected cache means operable to store mappings of said addresses and identifications of said users. The service device sends a request for information about a user requesting a service from said service device to said control means, which control means checks if said cache means contains an up to date identification. If said check gives an affirmative answer said control means fetches said information from said storage device and sends a reply comprising said information to said service device. On the other hand, if said check gives a negative answer said control means sends a request

for a real time identification of said address to said access device, which access device identifies said address with the aid of said identification device and sends said identification to said control means, which control means fetches said information from said storage device, and sends a reply comprising said information to said service device. The main advantage with the system according to the present invention is that it makes it easy and safe to identify a user without the need for cookies or log-in procedures.

Another object of the invention is to provide a method for identifying and accessing information about a user of a distributed communication system in real time without the users intervention. the method is performed with the aid of a system comprising at least one service device operable to provide services to said user, and at least one access device operable to provide access to said distributed communication system. The method comprises the following steps:

- that a user requests a service, implicitly or explicitly from a service device;
- that said service device sends a request for information about said user to a control means;
- said control means checks if a cache means connected to said control means contains an up to date identification:
- if said check gives an affirmative answer said control means fetches said information from a to said control means connected storage device, and sends a reply comprising said information to said service device; and
- if said check gives a negative answer said control means sends a request for a real time identification of an address of said user to said access device;
- said access device identifies said address with the aid of a to said access device connected identification device, and sends said identification to said control means;
- said control means fetches said information from a to said control means connected storage device, and sends a reply comprising said information to said service device. The main advantage with the method according to the present invention is that it becomes easy and safe to identify a user without the need for cookies or log-in procedures.

Another object of the invention is to provide at least one computer program product directly loadable into the internal memory of at least one digital computer. The at least one computer program product comprises software code por-

tions for performing the steps of the method according to the present invention, when said at least one product is/are run on said at least one computer. The main advantage with the computer program product(s) according to the present invention is that it becomes easy and safe to identify a user without the need for cookies or log-in procedures.

It should be emphasised that the term "comprises/comprising" when used in this specification is taken to specify the presence of stated features, steps or components but does not preclude the presence of one of more other features, integers, steps, components or groups thereof.

Embodiments of the invention will now be described with a reference to the accompanying drawings, in which:

Brief description of the drawings

Figure 1 shows a block diagram of a system operable to identify and access information about a user of a distributed communication system according to the present invention;

figure 2 shows another block diagram of the system in figure 1 in more detail;

figure 3 shows yet another block diagram of said system in figure 1, when said system is used in connection with the Internet;

figure 4 is a flow chart of a method for identifying and accessing information about a user of a distributed communication system in real time according to the present invention;

figure 5 is a flow chart of a method for updating of an internal cache means according to the present invention;

figure 6 is a flow chart of a method for handling the situation when said method according to figure 4 is performed in several geographical regions;

figure 7 is a flow chart of a method for performing a service according to the present invention;

figure 8 shows a schematic diagram of some computer program products according to the present invention.

Detailed description of embodiments

In figure 1 there is disclosed a block diagram of a system operable to identify and access information about a user of a distributed communication system according to the present invention. The distributed communication system can e.g. be the Internet, the Internet 2 or a digital TV-system, and comprises according to figure 1 three service devices 108 operable to provide services to different users, here disclosed at 109, in the form of three different users 109. The distributed communication system also comprises three access devices 105a, each operable to provide access to said distributed communication system. The system according to the present invention, limited by said broken line, comprises at least one control means 101; 103, here only one is disclosed, connected to said three access devices 105a and to said three service devices 108. The system according to the resent invention also comprises at least one storage device 102; 104, here only one is disclosed, connected to said at least one control means 101; 103. The distributed communication system can also comprise at least one attach means 107a, here three are disclosed, each operable to attach additional information to identifications. If said distributed communication system is the Internet, said service device 108 is an online service provider, said access device 105a is an Internet access provider (IAP) 105a, and said attach means 107a is an additional supplier 107a. A service provider is in this context any party providing an Internet based service. Said control means 101; 103 is in this context a server 101; 103.

In figure 2 there is disclosed another block diagram of the system disclosed in figure 1 in more detail. The aim with this figure is to illustrate that the system according to the present invention can be divided into a number of geographical regions. In figure 2 said system is divided into three different geographical regions. Said division is performed based on the distance between the individual control means 101; 103 in the system according to the present invention. In a fist region, encircled by the broken line, there is disclosed a central control means 101a connected to a central storage device 102a, two access devices 105a connected to said central control means 101a. In said first region there are also disclosed two regional control means 103a connected to said central control means 101a. Each said regional control means 103a is also connected to a regional storage device 104a. Each geographical region can also comprise a supplier means 106a for handling a number of attach means 107a. Each attach means 107a is connected to said supplier means 106a and to said central control means 101a. In

this figure 2 there is also disclosed a second geographical region comprising a central control means 101b, a central storage device 102b connected to said central control means 101b. This region also comprises a regional control means 103b connected to said central control means 101b. At last, said second region also comprises a regional storage device 104b connected to said regional control means 103b. As is apparent from figure 2 this second region does not comprise any access device, supplier means or attach means. It is noted that there can be more than one region comprising the same parts as in the first region. In this figure 2 there is also disclosed a third geographical region comprising a central control means 101c, a central storage device 102c connected to said central control means 101c. This third region also comprises a supplier means 106c and three attach means 107c, wherein each attach means 107c is connected to said supplier means 106c and to said central control means 101c. Of course there are connections between said different regions. In figure 2 there is disclosed a connection between said central control means 101a and said central control means 101b. There is also a connection between said central control means 101a and said regional control means 103b and a connection between said central control means 101b and said regional control means 103a. There is also a connection between said supplier means 106a and said supplier means 106c. In connection with figure 6 there is described the function of the system disclosed in figure 2.

In figure 3 there is disclosed yet another block diagram of said system in figure 1, when said system is used in connection with the Internet. The same reference signs in the different figures represent the same structural elements and are not described again. The Internet is schematically shown in the middle of the figure in the form of a "cloud". The system also comprises a first interface unit 110 connected to said service device 108, which first interface unit 110 also is connected to two different control means 101; 103. The system also comprises a second interface unit 112 connected to said control means 101; 103 and to two access devices 105; 105a. Said control means 101; 103 are also connected to said storage device 102; 104. Said interface units can e.g. be Application programming Interfaces (API). The system also comprises a cache means 111 connected to said control means 101; 103, which cache means 111 is operable to store mappings of said addresses and identifications for said users 109. The system also comprises an identification device 113 operable to identify an address of a specific

user 109. Said identification device 113 is connected to said access device 105a. Said identification device 113 is a device that finds a mapping between an address and an identifier for the user 109 currently using said address. This information may be extracted from a storage device connected to said access provider 105a, which the access provider 105a always updates with information on which address said access provider 105a assigns to said user 109. This storage device can e.g. be a data base. In connection with figure 4 there is described the function of the system disclosed in figure 3.

In figure 4 there is disclosed a flow chart of a method for identifying and accessing information about a user of a distributed communication system in real time according to the present invention. The method is performed without the users 109 intervention. Said method is also performed with the aid of a system, e.g. disclosed in figure 3, comprising at least one service device 108 operable to provide services to said users 109, and at least one access device 105a operable to provide access to said distributed communication system. The method begins at block 200. At block 202 the method continues with the step: that a user 109 requests a service A (see e.g. figure 3), implicitly or explicitly from a server device 108. The method continues at block 204 with the step that said service device 108 sends a request B, C1 for additional information about said user 109 to a control means 101; 103. At block 206 the method continues with the step that said control means 101; 103 checks if said cache means 111 contains an up to date identification. If said check gives an affirmative answer the method continues at block 208 with the step that said control means 101; 103 fetches said information from said storage device 102; 104, and sends a reply comprising said information to said service device 108. Said information fetched by said control means 101; 103 is connected to said identification from said cache means 111. If said check gives a negative answer the method continues at block 210 with the step that said control means 101; 103 sends a request D, see e.g. figure 3, for a real time identification of said address of said user 109 to said access device 105a. At step 212 the method continues with the step that said access device 105a identifies said address with the aid of said identification device 113, and sends said identification to said control means 101; 103. The method continues, at block 214, with the step that said control means 101; 103 fetches said information from said storage device

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102; 104, and sends a reply comprising said information to said service device 108. The method is completed at block 216.

The request B, se figure 3, contains the current IP-address assigned to the Internet user 109. The request B is forwarded by said first interface unit 110 to a request C1. The first interface unit 110 decides which server 101; 103 to send the request C1 to based on the geographical location of said server 101; 103 and the geographic location of said access means 105a said Internet user 109 is connected to. Said first interface unit 110 also decides whether to optimise this selection based on speed or reliability depending on the type of the request. The second interface unit 112 selects the correct access means 105a based on the IP-address in the request C1 and forwards the request E1, still containing the IP-address assigned to the Internet user 109, to the access means 105a. The access means 105a identifies the IP-address in request E1 by the use of said identification device 113, and sends an identification back to said server 101; 103. This is illustrated in figure 3 with H1 and I. Said server 101; 103 updates said cache means 111 with the mapping between the IP-address in request C1 and the identification delivered from the access means 105a. The server 101; 103 fetches information connected to the identification delivered from said access means 105a from said storage device 102; 104, and sends a reply to said service device 108. This is illustrated in figure 3 with L1 and M. The server 101; 103 finally logs the request.

In figure 5 there is disclosed a flow chart of a method for updating of an internal cache means according to the present invention. The method begins at block 240. At block 242 the method continues with the step that said server 101; 103 updates said cache means 111 with the mapping between said IP-address and said identification for each request C1, and sends a reply (H1 and I) in correspondence thereto. The method continues at block 244 with the step that said server 101; 103 receives a mapping between an IP-address and an identification by querying said access means 105a, or directly from another server 101; 103 when the other server 101; 103 has received a mapping according to step 242. The next step, at block 246, consists of storing said mapping in an internal cache means 111 together with a timestamp. This step is performed by said server 101; 103. At block 248 said method continues with the step that the server 101; 103 iterates through the currently stored mappings between a IP address and an identi-

fication in said cache means 111, and validates the entries if a certain time has elapsed since the entry was last validated according to the stored timestamp. The validation is performed by querying said access means 105a for an identification of the IP-address. At block 250 the question is asked if the IP-address is valid? An entity in said cache means 111 is valid if the access device 105a which "is the owner" of the address can verify that the identity still is associated with said address, by the use of said identification device 113. If the answer is affirmative the timestamp on said entry is updated as in block 252. On the contrary, if the answer is negative, i.e. the IP-address is invalid, the cache entry is removed as in block 254. The method is completed at block 256. It is noted that the steps according to this figure 5 is a part of the methods according to the present invention.

In figure 6 there is disclosed a flow chart of a method for handling the situation when said method according to figure 4 is performed in several geographical regions. The method begins at block 270. At block 272 the method continues with the step that said central server 101a downloads mappings between Internet access account information and an identifier from the access means 105a within a first geographic region. The downloaded mapping data is stored in said central storage device 102a. This can be done in real time, as soon as said access means 105a receives updated account information or new accounts, or on a regular basis by day or any other period of time with all new information since the last update. The method continues at block 274 with the step that said supplier server 106a downloads mappings between Internet account information and an identifier from said access means 105a within said first region in the same way as described at block 272. The supplier server 106a distributes the information to the attach means 107a in said first region. The attach means 107a attach additional information to the identification. Said attach means 107a sends the additional information together with the identification to said central server 101a. It is also possible that an attach means 107a receives information from an access means 105a directly, attach additional information and sends this to said central server 101a. The additional information is stored in said central storage device 102a. The next step, at block 276, consists of distributing, with the aid of said central server 101a, said mappings to said regional servers 103a and said mappings are stored in said regional storage device 104a. At block 278 said method continues with the step that said central server 101a distributes said mappings to central servers 101b in

other geographic regions if there are service means 108 requesting the information from regional servers 103b or the central server 101b in this other region. The distributed mappings are stored in said central storage device 102b for said other region. The next step, at block 280, consists of distributing, with the aid of said central server 101a, said mappings to regional servers 103b in other geographic regions if there are service means 108 in that region requesting the information from those regional servers 103b. The method is completed at block 282. It is noted that the steps according to this figure 6 is a part of the method according to the present invention.

In figure 7 there is disclosed a flow chart of a method for performing a service according to the present invention. With this service the invention can be used to enable a service means 108 to sponsor Internet users 109 when they visit the service means 108 or use services provided by said service means 108. The method begins at block 300. At block 302 the method continues with the step that an Internet user 109 connects A (see e.g. figure 3) to a service means 108. The method continues at block 304 with the step that said service means 108 makes a request, through said first interface unit 110 for a real time identification of said online Internet user 109 to check whether the Internet user 109 is allowed to get sponsoring. If the answer is negative, i.e. if the Internet user 109 not is allowed to be sponsored, the method continues at block 306 with the step that said service means 108 displays a message to the Internet user 109 explaining how the Internet user 109 can get hold of this service. If the answer on the contrary is affirmative, i.e. the Internet user 109 is allowed to be sponsored, the method continues at block 308 with the step that said service means 108 sends a logon request through said first interface unit 110. Said first interface unit 110 redirects the request to a server 101; 103 with an indication of which access means 105a the Internet user 109 is using. The server 101; 103 logs the exact time the logon request was made together with the identification of the Internet user 109, where the identification is derived in the same manner as previously described. At block 310 the method continues with the step that said service device 108 verifies that the Internet user 109 is actively using the services of said service device 108 and sends update requests through the first interface unit 110. Said first interface unit 110 redirects said request to the server 101; 103 which logs the exact time the update request was made together with the identification of the Internet user 109.

The next step, at block 312, consists of the following: said service device 108 notes when the Internet user 109 is not using said services any longer and sends a logoff request through said first interface unit 110. Said first interface unit 110 redirects the request to the server 101; 103, which logs the exact time the logoff request was made together with the identification of the Internet user 109. The method continues, at block 314, with the step that the log, on a regular basis, is parsed to calculate the amount of time a specific Internet user 109 has used a service at a specific service means 108. At block 316 the method continues with the step that said service means 108 will be billed for this time and said access means 105a of the corresponding Internet user 109 will be credited and will reduce the Internet users 109 bill with the corresponding amount. The method is completed at block 318. It is to be noted that the steps according to this figure 7 is a part of the method according to the present invention.

In this realization of the invention, information about an Internet user 109 is provided by one or several information suppliers 107a which all have a relationship to the information supplier 105a also being the party providing the Internet access to the Internet user 109. The information provided is compiled and stored in advance in storage (102 or 104) or compiled in real time in cooperation with the Internet access provider 105a. The compiled and stored information is stored in such a way that it is impossible to associate an IP-address with the stored information without the help of an Internet access provider 105a which also is the party distributing the IP-address to the Internet user 109.

When the Internet user 109 implicitly or explicitly requests a service A from a online service provider 108 this online service provider 108 has the possibility to requests part of, or complete information about the Internet user 109 requesting the service. The online service provider 108 will post the request to a device 110 where the device decides where to forward the request. As a result the online service provider 108 receive parts of, or complete information about the Internet user 109 requesting the service.

The retrieved information will be used for controlling parts of, or the complete content of a service provided by the online service provider 108. The retrieved information can also be used to collect statistics about requests to a specific service provided by the online service provider 108.

In this realization of the invention, information about an Internet user 109 is provided by one or several information suppliers 107a which all have a relationship to the information supplier 105a also being the party providing the Internet access to the Internet user 109. The information provided is compiled and stored in advance in storage (102 or 104) or compiled in real time in cooperation with the Internet access provider 105a. The compiled and stored information is stored in such a way that it is impossible to associate an IP-address with the stored information without the help of an Internet access provider 105a which also is the party distributing the IP-address to the Internet user 109.

When the Internet user 109 implicitly or explicitly requests a service A from a online service provider 108 this online service provider 108 has the possibility to request a result from a matching process performed by the server (101 or 103) and request a match with the data retrieved given a specific Internet user 109 requesting a service from the online service provider 108. The online service provider 108 can also specify criteria's to match with within the request for match.

The result of the requested match will be used for controlling parts of, or the complete content of a service provided by the online service provider 108, or more specific, be used to target information or advertisement given the result from the requested match.

The invention will as described so far only be able to identify an individual Internet user 109 defined as being the holder of an Internet subscription. This introduces a problem to identify the physical individual who is actually using the Internet connection N and requesting services A. For example, several members in a family may use one computer, one modem, one telephone line and one Internet subscription for all their Internet usage.

To improve the quality and the possibility to target information in more detail, a small piece of software enables the physical Internet user to select between different profiles (eViduals). These profiles are stored in said storage device 102; 104 in the same way as information in the already described examples. Each said profile has an own identity. The software communicates the currently selected eViduals to the server (101 or 103).

There is also a device (specifically a web-site) enabling physical Internet users to maintain their eVidual profile. This device also enables physical Internet users to select their eVidual regardless of their present location. The facility for

physical Internet users to maintain their eVidual profiles permits the QualityAds Network to relay user defined data to online service providers 108 on demand.

On usage of this is that online service providers 108 will be able to personalize content and appearance to suit Internet users 109 based on individual preferences. Another possible use is to provide automated log-in-procedures to services provided by online service providers 108.

Not described in the drawings is the possibility for online service providers 108 to let Internet users 109 interact with servers (101 or 103). This interaction can be used to provide a possibility for an Internet user 109 to give feedback to an actin taken by the online service provider given the result m or a request B to server (101 or 103). The feedback from an Internet user 109 is stored in storage (102 or 104) in order to improve the quality of future requests B to server (101 or 103). The feedback can be handled in real time. In this scenario the Internet user 109 acts as an information supplier 107.

In figure 8 there is disclosed a schematic diagram of some computer program products according to the present invention. There is disclosed n different digital computer 100_1, ..., 100_n, wherein n is an integer. There is also disclosed n different computer program products 102_1, ..., 102_n, here showed in the form of compact discs. The different computer program products 102_1, ..., 102_n are directly loadable into the internal memory of the different digital computers 100_1, ..., 100_n. Each computer program product 102_1, ..., 102_n, comprises software code portions for performing some or all the steps of figure 4 when the product(s) 102_1, ..., 102_n is/are run on said computer(s) 100_1, ..., 100_n. Said computer program products 102_1, ..., 102_n, can e.g. be in the form of floppy disks, RAM disks, magnetic tapes, opto magnetic disks or any other suitable products.

The invention is not limited to the embodiments described in the foregoing. It will be obvious that many different modifications are possible within the scope of the following claims.